# WEEDEN COOKE

ON

# HYDROCEPHALUS

Ch 1. 18

# HYDROCEPHALUS RE-CONSIDERED

AND

ITS RELATIONS TO

# INFLAMMATION AND IRRITATION OF THE BRAIN

DEFINED;

WITH CASES FROM HOSPITAL AND PRIVATE PRACTICE IN EXEMPLIFICATION OF ITS

# PATHOLOGY, PREVENTION, AND SUCCESSFUL TREATMENT.

BY


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ETC. ETC.



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TO

# DR. WILLIAM MARSDEN,

FOUNDER OF THE ROYAL FREE HOSPITAL, AND SENIOR SURGEON TO THE SAME.

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My dear Doctor,

Not the least of the pleasures attendant upon the completion of any literary labour is that of being privileged to dedicate it either to some warm friend whose kindly sympathy and judicious advice has smoothed the ruts with which the road of life is ploughed, or to some public man whose name is famous for distinguished talents worthily applied.

Fortune has been kind in giving to me a name partaking of both these characters, a name which would illustrate any page, which is blessed by multitudes now, and will be revered as belonging to a great benefactor of his race in time to come.

Would that this slight tribute were more worthy of the countenance of your name. It will, however, I know, be favorably regarded by you, because it is the result of observations made principally in that noble Institution whose benevolent principle was conceived and whose development and rapid rise have been secured by the untiring energy, indomitable perseverance, and great administrative talent of the practically benevolent man with whom I feel it an honor, no less than a pleasure, to be associated.

Mainly is it due to your enlightened conviction that the immense numbers of Children who flock to the Royal Free Hospital should be under

the treatment of an officer especially devoted to their Diseases, that I have been enabled, from so large a sphere of observation, to collate the experience which is embodied in this little volume, an experience which, although but imperfectly made use of, will not, I hope, be entirely without benefit in stirring up enquiry, and in rescuing some of these hitherto obscure diseases of Children from the empirical mismanagement to which they have for so long been subjected.

As a practical Philanthropist, the honored Founder of the most serviceable and most important of the recent Temples of Charity which this country has reared; as the scientific Surgeon whose aim has ever been to heal rather than to wound—to save than to lop off the injured limb,—your name deserves all honor.

May your useful life long be spared to carry out the benevolent scheme of your conceptions, and may your days be passed in health and peace,

and in the full enjoyment of your friends' affection and the world's esteem.

Believe me to remain,
My dear Doctor,
Most faithfully yours,
THOMAS WEEDEN COOKE.

17, *Lower Brook Street.*
September, 1850.

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# INTRODUCTION.

Immaturity of the Child's Brain – its great liability to Disease —empirical treatment—fatal result. Prefatory Remarks on Inflammation and Irritation and Blood-letting.

FROM the very dawn of the independent existence of Infant Man, he is endowed with an apparatus for secretion and excretion, for absorption and assimilation, so that he may at once carry on the process of growth, independent of direct maternal support. The heart, lungs, liver, and kidneys, although submitted to slight modifications of structure after birth, are, for all the purposes to which these organs are designed, mature in the new-born Infant, performing all their natural functions with the same completeness as in adult life.

Not so is it with the *entire* structure of the New Being. The muscles and nerves cannot

be said to be complete until the Child can walk, and talk, and perform all those functions which appertain to an independent life: the organs of reproduction are incomplete until puberty, and the brain only attains its full development at the age of seven. At that age, say the Wenzels, "cerebrum hominis, et quoad totum, et quoad singulas partes, absolutum esse videtur;" and although Soemmering, on the one hand, has declared the brain to be mature at the age of three; and others, amongst them Mr. Lawrence, have considered the cerebrum to be imperfect until the arrival of puberty, or at that time when all the reasoning faculties are complete; nevertheless, so much do subsequent investigations tend to support the opinion of the Wenzels, that seven years is now almost universally given for the completion of the maturity of the human brain.

During these years of active growth, this delicate organ, for some time only partially enveloped in its bony case, and necessarily highly vascular for the purpose of its nutrition, must be peculiarly obnoxious to disturbance from slighter causes than would influence the other more mature organs of the body; and, when so dis-

turbed, requires, like all immature things, more watchful care, to prevent imminent decline of both substance and function. It needs but to run over the reports of the Registrars of Life and Death, now so carefully collated, and so generously made accessible to all, to become aware of the fatality of cerebral diseases at the time of the Brain's immaturity. Under the names of "Hydrocephalus," "Cephalitis," "Apoplexy," "Paralysis," "Chorea," "Epilepsy," "Convulsions," and "Disease of the Brain," how large a proportion do we find occupying the column devoted to those who have died before the age of fifteen; and if we enquire a little further, we shall discover that nearly the whole of those who have died from Convulsions, Cephalitis, and Hydrocephalus, were less than five years of age; whilst a little more investigation will show that nearly one half—considerably more than one-third—of our population is destroyed by disease before the age of five years.

At this, it may be that Malthusians shall rejoice, and many even well-disposed persons are often heard to say that it is a wise provision of Providence to prevent the over-stocking of a country. Viewing this early decay of our offspring even with the cold, calculating glance of a po-

litical economist, it will however generally be acknowledged as a fearful evil that those beings who would each of them in their own sphere be producers as well as consumers,—turning up perhaps new soil in new lands to make food for more mouths than the hands so occupied,—should be *allowed* to die from causes which advancing science declares to be removable.

Looking upon this great loss of life at so early an age from a higher point of view—regarding the social unhappiness thereby produced—seeing as we do, daily, the Rachels "weeping for their children because they are not," how imperative is the necessity for all those whose opportunities give them large spheres for observation, to mark and learn, and diffidently but faithfully to contribute their mite to the happily increasing store of practical improvement in the treatment of the maladies of the young.

Early in my professional career I found that "Water on the Brain" had by prescription acquired an hereditary right to kill every child it attacked. It was not for lack of treatment, but, do what we may, the subject of it would die. And so they did. For were they not leeched? were they not bled? were they not calomelanized?

And yet for all that they died; and others were attacked, and they were subjected to the like heroic treatment, unhesitatingly, without discrimination, and they died too.

This melancholy experience directed my attention at an early period to Diseases of the Brain in children, but a stronger impetus still urged my mind to the consideration of this subject: a near and dear little female relation having been cut off in the most joyous period of her young life, after undergoing the routine treatment then practised; a system which I fear must now be characterized, if the truth dare be spoken, as the routine slaughter.

Opportunities for observation have been, alas, too frequent, and, in my present appointment at the Hospital, indeed overwhelming; so that the opinions I have formed, and wish to embody in this little treatise, are founded upon no theoretical speculations, but have been forced upon me by daily practical experience.

An enquiry into the nature, causes, and proper treatment of the Cerebral Diseases affecting children, requires in the outset that we should define in what consists *Inflammation*, and to what condition of system the term *Irritation* should

be applied; how far the former is a healthy action, necessary for surgical purposes, such as the healing of wounds made in the performance of the surgeon's duties; and when it is a destructive process requiring the skilful physician to retard its progress. To what extent likewise the latter is a normal condition of the system; and when in excess it becomes morbid, and produces both functional and structural changes.

It is well known that if a child cut its finger, the process of union is accompanied by heat, redness, pain, and swelling,—the requisites to constitute inflammation,—adhesive inflammation as it is termed, on account of the glueing together of the parts by means of lymph effused from the blood vessels for that purpose; the same occurrences take place in the healing of a stump after amputation. This is necessary and salutary inflammation, without which the surgeon could not perform those operations by which he prolongs life, and makes it acceptable to those who had ceased to find any comfort in it.

When by the application of cold, or heat, or injury by violence, or by the absorption of poisonous matter, Inflammation is set up, either on the surface, or in any internal part of the

body, it is a morbid and destructive process, and must be subdued with all the vigour and all the armamenta put into our hands by reason and experience.

The term Irritation is one hitherto of very indefinite signification, the precise origin, nature, and effects of which have not received that consideration so largely afforded to inflammatory phenomena. Allied, yet opposed to Inflammation, it not unusally both precedes and succeeds it, and plays the mime to many of its attributes.

It is not necessary to tell the reader that sensation and volition are actions appertaining to the Brain and Spinal Column; or that the chain of ganglia, known as the Great Sympathetic Nerve, presides over and is absolutely necessary to the due performance of the functions of the viscera. Would that our information, so certain on this point, was equally exact with regard to the *nature* of nervous power; but so long continued and persevering have been the enquiries made upon this subject, that we must almost despair of any further light being thrown upon it; and for myself I am content to believe in the Electrical Theory which explains more fully than any other the peculiarities of this wondrous agent.

When a nerve is cut off from all communication with the brain or spinal marrow, the parts to which it is distributed lose sensation and volition; and but that the ganglionic system supplies accompanying filaments to the minutest artery—thus preserving the contractility of the vessels and the circulation of the blood—the part so deprived would die.

This experiment exhibits the normal influence of the nervous fluid, whatever that may be, in carrying on the natural and healthy functions of life. Each muscle of the body is put into motion by the will acting through the nerve; or, in the case of the involuntary muscles, through the sympathetic nerve, which seems to perform its functions independent of the will. This exercise of nervous power or influence is that natural healthy irritation which is injurious only when its balance is disturbed, either as regards excess or deficiency.

When a nerve is stimulated, or, if I may use a term more usually employed in electrical science, rubbed, it is excited, and produces certain effects in the part to which its terminations are distributed, preceptible to our senses, such as muscular spasm, otherwise called cramp, con-

vulsions, epileptic fits, &c. The primary source of this irritation of the nerve may be situated either within some of the viscera, the morbid influence being transmitted through the sympathetic filaments to the brain, and thence to the peripheral extremities of the nerves; or it may come immediately from the brain itself, acted upon by unhealthy blood, by external impressions upon the mind, (as shewn in the blush of modesty, or the pallor of fear) or from direct physical injury. This is an excessive and abnormal employment of the nervous power to which the term Morbid Irritation is applied.

The *nature* of this excited condition of the nervous matter must necessarily be obscure, from the obscurity which surrounds our knowledge of the *mode* of *action* of the nerves themselves; but the *causes* of Irritation are well known and will be duly remarked upon, whilst the *effects* are likewise beginning to be acknowledged in the structural changes which occur in various parts of the body—effects that have been in times passed attributed without distinction to inflammatory action.

Happily for suffering humanity, a broad line may now be drawn between these two maladies—

Inflammation and Irritation; and highly important is the distinction, insomuch that the remedies desirable for the one would be worse than useless, perhaps positively homicidal, in the other.

To Sir B. Brodie, in his work on the Diseases of Joints, is the profession especially indebted for much information respecting the simulation of inflammation by nervous irritation. To Dr. Marshall Hall in his "Essay on the effects of Loss of Blood;" to Mr. Travers on "Constitutional Irritation;" to the astute observations of Dr. Gooch in his work on the "Diseases of Women;" more recently to the practical work of Mr. Peter Hood, on the "Diseases of Children;" as well as to the original investigations of Andral, and Broussais; do we owe that revolution in medicine respecting blood-letting which so clearly indicates an acknowledgment of the blunder of our forefathers in confounding the two diseases, Inflammation and Irritation.

It may be safely affirmed that within the last twenty years this baneful practice of blood-letting has so fallen into gradual disrepute that now not one in twenty of those patients is blooded who would have been so heroically butchered when the lancet and the bleeding pole still exhibited as

the barber's sign were employed by this worthy, and his coadjutor the blacksmith, in every town and village in the country, for every malady to which the human frame is heir. I myself remember in my early pupilage to have been taught the art of bleeding as the first and most necessary part of my expected duties; and many are the fountains of life I have made to flow, under my old master's direction, (Heaven pardon him and me,) I fear not merely uselessly. How changed is the practice now may be gathered from the fact, that during three years' residence as house surgeon at the Royal Free Hospital, in which time upwards of 86,000 persons passed under treatment, I had not occasion to bleed generally more than twenty-five times. Of local depletion by cupping and leeches I am unable to speak with accuracy.

# INFLAMMATION.

## The Pathology of Inflammation considered generally.

Proceed we now to consider the phenomena which constitute the state called Inflammation, which has been investigated, and reasoned upon, and disputed about, by a great number of very celebrated medical philosophers. Before the discovery of the circulation of the blood by Harvey, the liver was considered as the centre of the vascular system; and it was a received opinion that inflammations were produced by some excessive stimulus applied, not to the part affected, but to that organ. Even long after the great discovery of Harvey, but little progress was made in the right comprehension of inflammatory diseases. There were chemical and mechanical theorists, of whom Böerhaave and Leeurvenhack were the principal representatives. Then came the vita-

lists, Stähl and Van Helmont, the latter of whom constructed a theory more rational than any which had preceded him, and approaching indeed very nearly the opinions of the celebrated Hunter. These investigators had hitherto confined their enquiries to, and founded their theories upon, the motion of the fluids; but now another school arose, and the solidists represented by Hoffman, Baglivi, and Cullen, found all the phenomena of Inflammation arising in a morbid condition of the solid parts. Almost every medical work that was now issued from the press contained chapters upon the nature of Inflammation; but not until the great John Hunter devoted his acute powers of investigation to unravel the web which had been woven by previous investigators, and contributed by his own observations in practice, and by experiments upon the lower animals, to the better comprehension of these phenomena, did any real substantial light shed itself over this occult mystery.

In all inflammations there will be found more or less of heat, redness, swelling, and pain; and all of these John Hunter attributed to increased action of the vessels. It was his opinion that there is distention of the vessels beyond their

natural size, and that consequently a greater amount of blood circulates in, and passes more rapidly through the affected part; the capillaries which previously conveyed only serum, now contain some of the red particles of the blood, and so the redness is produced; the pain is attributable to the greater sensibility of the nerves, and the pressure upon them of the distended blood-vessels; the heat has been proved to depend upon the increased flow of blood to the inflamed part; whilst the swelling is due at first to the same cause, and subsequently to the effusions of serum, lymph, and pus, which are the results of inflammatory action. Since the investigations of Hunter, Drs. Wilson Philip, Thompson, and Hastings, having the advantage of the improved microscope to assist them, have demonstrated that there is *diminished* action in the capillaries, implicated in the inflamed part; but that the larger arteries have, as Hunter declared, an increased impetus. Had the eyes of Hunter been assisted with the artificial means Dr. W. Philip has used so advantageously, doubtless he also would have seen that which now it would be folly indeed to dispute.

Nature has given to the capillary terminations

of the arteries a forcible contractile power, for the purpose of propelling the fluid they convey. This contractile power being diminished when Inflammation has arisen, the vessels remain in a dilated torpid condition; the blood presses into them until they become choked up, and finally the serum and lymph of the blood exude from their delicate walls; or the vessels themselves are ruptured, and the blood which escapes, together with the broken down vessels, contribute to the formation of a white opaque creamy fluid, which is called pus. This is the most common and most important of the results of inflammatory action.

The other terminations of inflammation need not here be considered. They will be more advantageously studied in the works of Hunter, Hewson, and others, devoted especially to this subject—the intention of this slight sketch, being merely to bring the mind of the reader by gradations to the consideration of the nature of the action which is going on in the brain of those children who are suffering from what has so long been mis-called Hydrocephalus.

# IRRITATION.

## The Pathology of Irritation considered generally.

Having thus rapidly sketched the nature and results of *Inflammation,* I must proceed to consider now the nature and result of *Irritation,* preparatory to discussing these two morbid conditions, when the brain is the seat. The blood and the nerves are dependent on each other for support; and as Inflammation is connected *most intimately* with an altered condition of the blood and its vessels, so Irritation is *principally* an abnormal condition of the nervous system; but each may become gradually converted into the other.

Mr. Travers in his learned treatise on "Constitutional Irritation," has brought together numerous arguments in support of the theory of a mutual dependence subsisting between the

nervous and sanguineous systems. In the summary of his "Further Enquiry," he says, "spoil the blood, or in any way interrupt or disturb the nervous or vascular system, and you have changes corresponding to the first cause of disturbance, its nature and extent, in the associated systems, whether the change be limited to the capillary system and sentient surfaces, or extend to the centres of the nervous and vascular systems. The phenomena of irritation admit of explanation only on the hypothesis of a disturbance in the balance subsisting between the nervous and vascular actions. In disease they are seldom, if ever, uniformly and permanently exalted or depressed in a corresponding ratio; if it were so, diseases might be more simple, but they would be more destructive. A disturbance therefore of the relation subsisting between the vascular and nervous actions is the theory of constitutional irritation." In speaking of the phenomena of irritation, the reader will bear in mind that it is *morbid* irritation that is being discussed; the *natural* influence of the nervous system over the sanguineous, and *vice versa*, it requires no arguments to enforce.

After perusing this excellent definition of the

mutual re-action of the blood and the nerves in disease, Mr. Travers proceeds to state his opinion that *Functional Disease* is dependent entirely on nervous derangements, inappreciable to the senses, yet undoubtedly present, whilst *Organic Diseases* are induced by vascular disturbances; or, if I may be allowed to amplify a little, that Functional Disease is a derangement brought about by an irregular—it may be either defective or superfluous—application of the vis nervosa: that Organic Disease is the product of irregular sanguification of the affected part, and this likewise shall be either deficient or superabundant in the quantity or force or consistency of the fluid. In two words, we have Irritation and Inflammation given up exclusively, the first to the nervous system, and the latter to the sanguineous. To prove that morbid irritability of the nervous fibres is alone the cause of functional derangements of the various organs of the body, it must first be shown that no function is disturbed when the structure is diseased; and to prove that structural disease is alone dependent on vascular causes, we must first boldly deny the facts which have been brought before the profession in connection with this subject by Andral, Carswell,

and others, shewing the total absence of all evidence of vascular excitement, either within or in the neighbourhood of Cancer, Tumours of various kinds, and above all, especially in connection with this subject—Ramollissement Cerebri. I am sure the faith that will invariably be placed in Mr. Travers' own arguments for an intimate union of the two systems will prevent the implicit adoption of this distinction.

The definition of irritability given by John Hunter, viz., "An increased disposition to act, without power to act with," or "over-action of strength of parts," is not quite worthy of so great a mind; it conveys not the slightest idea as to how that "over-action," or "increased disposition" is brought about, by what stimulus it is effected, and which part of the system it is which operates this abortal influence. Since the time of Hunter, however, although much neglected, the subject of Irritation has not been entirely passed over by Pathologists; and the results of pathological investigations, obscured as they are by the impalpable nature of the nervous power, nevertheless prove, by numberless corroborative phenomena, that the nervous system is subject to diseased action, which does sometimes produce destruction

of the nervous matter, and that the sensible indications of this morbid action are those which are known under the term—"Irritation."

It is now many years ago since the Brunonion doctrine of Sthenia and Asthenia obtained in this country—but more especially on the continent—numerous adherents. Much truth, combined with simplicity of arrangement and of treatment, naturally led theorists to give in their adhesion to the new doctrine; but the sober influences of experience proved the fallibility of these opinions in some instances, and, as a consequence, the followers of Dr. Brown are now but few, and his ideas are looked upon as speculative. Rapid popularity is of mushroom growth, and rarely is it not followed by rapid decay, the one extreme being often as undeserved as the other; for when expectation is raised too high, the consequent disappointment is followed by unmerited neglect. That Inflammation is a sthenic, and Irritation an asthenic disorder of the system, would be true, if extreme cases only were to occur, it is impossible to gainsay; indeed, so favourably am I disposed to regard the opinions of Dr. Brown, feeling the necessity for certain landmarks to direct us when complications and obscurities obstruct our vision,

that I hesitate not to adopt his views in the disease of which I am treating; with this reservation,—that there are mixed cases, and those not a few, which must not be considered as ranking under either of his banners, but which, betaking themselves as it were to the cross-benches, require a modified treatment, partaking of the character of a compromise. But forgetting mere names, and theories and systems, without at all despising the attempt to establish general laws, if they be founded on wide experience, let us examine for ourselves the real nature of Irritation as exhibited in practice.

A child is born of sickly parents, and is badly nourished; the blood is consequently poor: an asthenic condition is induced. The nervous power not having all its full wonted duties to perform, viz.—of digestion, assimilation, secretion, and excretion, expends its waste either in irritating the whole system, and so producing constant peevishness, ill-temper, feverish symptoms, &c., or, concentrating all its baneful influence in one organ such as the Brain, it induces functional disturbances which shall end, if uncared for, in structural alterations inimical to the due performance of its vitalizing powers. That disorganization of structure may be produced independent of in-

flammatory action, is shown in numerous instances: take, for example, hypertrophy and atrophy of the heart and other organs; ramolissement of the brain; granular degeneration of the kidney; cirrhosis of the liver; cancer of the mamma, or uterus; glandular enlargements; steatomatous and fibrous tumours; and phthisis itself. Are not these all instances of structural alterations, which progress and terminate without any of the signs necessary to constitute Inflammation? It will hereafter be seen that the impoverished condition of the blood which induces local and general irritability is brought about by causes entirely independent of the condition of life of those whose duty it is to take care of the infant; that all children are obnoxious to this anæmia, and as a consequence to its injurious influence on the nervous system.

Irritation, Asthenia, and Anæmia, I am inclined to look upon as translateable terms. In children at least I am convinced they are so, and that our treatment of the various maladies of the young may be not only simplified, but very much improved by the adoption of this opinion.

True Inflammation on the other hand is a sthenic disorder, attended by hyperæmia, producing more rapidly fatal derangements of structure,

and consequently requiring the most energetic measures of depletion to stay the baneful progress. Between these two morbid conditions, which make up the sum of all disease, there are modifications of each, by the due observance of which the surgeon or physician shall shew himself active in the pursuit of knowledge and of the welfare of his patients; for it is by observation at the bedside alone that nice discrimination is to be acquired which is requisite to tell when depletory measures may be desisted from and stimulating ones substituted; or when the former may be put aside altogether, notwithstanding that the symptoms may be said to resemble those of inflammatory action.

In applying these large and general principles to the consideration of the Cerebral Diseases of Children, I shall have occasion to break new ground, and, I fear, to differ from many who have preceded me in the consideration of this subject. Not wilfully nor without diffidence do I oppose my individual opinion to these high authorities, but conviction is strong within me from the success of my treatment; and although "the race is not always to the swift, nor the battle to the strong," still the acknowledgment of failure, and the almost abandonment of hope

in the successful issue of cerebral disease in childhood so copiously distributed through the works treating of this subject, give me encouragement to hold fast to the opinions I have formed and the treatment I have pursued. I trust that my voice will not entirely be lost, that others will recognize the division I have proposed, and the treatment will follow as a matter of course. Abundant are the stores of learning and thought employed at various times in elucidation of these fatal diseases; and in presenting this addition to the world, I am pleased to have the opportunity of acknowledging the great assistance I have derived from the writings of Maunsell and Evanson, West, Abercrombie, Yeates, Cheyne, Risdon Bennett, Nichol, Hood, and, though last, not least, Whytt and Gölis; whilst in justice to myself I must state that my opinions have been formed solely from the study of the great book of Nature, for the reading of which I have enjoyed the most extensive opportunities in the practice of the Royal Free Hospital. During the last three months 950 new patients have passed under my treatment, and I am within the mark in stating that one-third of those have suffered more or less from Cerebral Disease.

# NATURE OF THE DISEASE

KNOWN AS

# "HYDROCEPHALUS."

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Necessity for revision of the nomenclature. Division of the subject into the two natural classes—Inflammation and Irritation.

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Having considered the nature of Inflammation and of Irritation as affecting the system generally, we may now proceed to consider to what extent and under what circumstances the Infant Brain is subject to these morbid influences. Hydrocephalus, from ὑδωρ, water, and κεφαλή the head, is the name accepted by medical men for a disease of the brain, in the course of which serous effusion may or may not arise. There shall be no water, no dropsy in the head, but there shall be a regular successive combination of abnormal symptoms, pointing to the brain as their seat, which the word Hydrocephalus, or Hydrenchephalus, serves

to connect under one comprehensive appellation, which is universally employed, notwithstanding that positively it indicates but a *result*, and that by no means constant, of the disease which is thus denominated. Wrong as it is to characterize any disease by its last stage only—thus in effect blinding the student to the early and remediable symptoms—is it not unworthy of the dignity of science, and cruel to suffering Infancy, to allow two distinct diseases—lesions occurring in opposite states of the system, having definite and totally distinct symptoms, and above all requiring treatment as opposed as it is possible to conceive—to retain an appellation, not vague only, but misleading, altogether unscientific, and untrue ?

The importance of defining, not only the exact seat of disease, but also the nature of the action—sthenic or asthenic—which is operating to the derangement and disorganization of the organ attacked, is recognized in the lungs, in the heart, in the uterus, in the liver, and may be extended to all the structures of the body. The adult Brain itself has its Cerebritis, its Meningitis, its Delirium Tremens, its Ramolissement; but still do we go on calling these distinct diseases of childhood

by the one appellation which is really indicative of neither, and so tend authoritatively to procrastinate the march of improvement. Not of less importance is it to separate in the mind of the student Inflammation of the Brain and Irritation of that organ; than it is to make him clearly comprehend the diagnostic distinctions of Phthisis and Pneumonia, Stricture and Calculus, Erysipelas and Erythema. A further reason for the revision of our nomenclature in these affections of the child's brain is shown in the absence of all cerebral effusion in many of the cases set down as Hydrocephalus. But why, even in those cases in which effusion has taken place, why, it may be asked, shall this last symptom—this mere effect—give the name to the malady? Is it so with other dropsical effusions? Do we find enlightened practitioners registering cases as Ascites or Anasarca, or even Hydrothorax or Hydropericardium, when they know that the liver, the peritoneum, the kidneys, the lungs and their investing membranes, the heart and its covering, have been the seat of the original disease, and that no treatment will avail in permanently removing the dropsical effusion unless directed especially to the emancipation of the diseased organ?

Feeling that the object of all our studies, the proper *treatment* of disease, will be promoted by at once defining these maladies systematically and upon pathological data, knowing them no longer as Hydrocephalus acutus, sub-acutus, or chronicus, as Strumous Hydrocephalus, or Hydrocephaloid Disease, I propose to abolish the fictitious misnomer altogether, and to consider the subject under those two natural heads indicated by both pathology and experience, and warranted, nay, demanded, by the successful results of treatment pursued upon these principles in more than a hundred cases. In the first place I shall treat of

*Cerebral Inflammation* of a sthenic character, terminating either with or without serous effusion; and, secondly, of

*Cerebral Irritation* of an asthenic character, also terminating either with or without serous effusion.

# CEREBRAL INFLAMMATION.

Symptoms—causes—treatment—results of treatment—pathology.

INFLAMMATION of the Brain and its Membranes in the adult is a disease which has been recognized and defined by all the great masters of physic in our own and other countries. The various parts even of the cerebrum, as well as its coverings, have had attributed to them special symptoms by which the exact seat of the inflammatory action it is said may be indicated. If we see a man with a flushed face, and bright restless eye, with the pupil contracted and intolerant of light; if we find he has a quick, hard, full pulse, that the tongue is protruded with a jerk, and is red at the tip and edges; if he complain of sharp, severe pains darting through the brain, with a sense of constriction about the scalp; if there be mental

excitement without a cause, with confusion of thought and failure of memory, sleeplessness or alarming dreams, a ringing or booming noise in the ears, general restlessness, with thirst, heat of head, and violent throbbing of the temporal arteries, we feel no diffiulty—the merest tyro in physic will at once say this man has Cerebral Inflammation. But in the young child we have not the assistance of our patient's mind to direct us to a conclusion; all these symptoms *may* be present in the case of our little patient, but many of them we are unable to discover; and therefore are we led to observe more carefully signs which present themselves independent of any explanation from the patient.

### SYMPTOMS.

Those symptoms which may be observed both in the adult and in the infant are the flushed face, the bright glassy eye, the contracted pupil, the intolerance of light—as shewn by the little sufferer hiding its head in its mother's lap—the quick, full, hard pulse, the severe pains in the head—indicated by a sharp cry of suffering, with the hands raised to the head—sleeplessness, or sleep disturbed by the poor child starting up in terror, evidently

alarmed by some frightful dream—general restlessness, thirst, heat of head, and throbbing of the temporal arteries. Although I have just said that these symptoms are common to the Infant and the Adult, it is not to be supposed that all are to be found in every case of Cerebral Inflammation. Many of them are indeed frequently absent. It will likewise be remarked by those who devote themselves at all to the peculiarities of Infantile Disease, that there are symptoms observable in the cerebral affections of the child which are not met with in the man. The most remarkable of these is, the convulsion with which the disease may be ushered in. It is not an uncommon occurrence for a child apparently in robust health to be suddenly seized with violent convulsions which shall be the immediate precursor of all the other terrible symptoms I have enumerated. Violent vomiting is another symptom characteristic when taken conjointly with the others, grinding of the teeth, constant rolling of the head from side to side, fretfulness that will not be pacified, sometimes amounting even to the violence of delirium. These are signs peculiarly demonstrative of acute inflammatory action of the brain in children, and

constitute the chief part of those which make up the first stage of the disease. Should these symptoms not be timely subdued by the active depletory measures that will be advised when we come to speak of the treatment—after a longer or shorter period, sometimes even as early as six hours from the commencement of the attack, the second stage or that of collapse will set in, and then a total change is observed. The glistening eye becomes dim and inexpressive—a heavy sleep succeeds to the watchfulness of the previous stage; paralysis, or at least general muscular inertness takes the place of the convulsive action; the surface of the body becomes pale and cold; there is frequently squinting and deafness, and the sharp, angry cry has degenerated into a low, querulous, constant moan; the respiration, before accelerated, is now slow or irregular; sordes gather about the mouth; deglutition is performed with difficulty; and the unconscious little creature, lying on its back from an inability to preserve itself in any other posture, sinks quietly, or in one last convulsive motion, into death.

The disease I have thus but very faintly described is no other than the cerebritis or meningitis of the adult, and in its collapsed stage only has it the least right to the term Hydrocephalus,

because then only is it that effusion takes place, as all other dropsical effusions do, from the blocking up of the capillaries by that fibrinous deposit, which is always the result of excessive inflammatory action.

## CAUSES.

Having described the nature and symptoms of sthenic Inflammation of the Brain in childhood in its two prominently distinct stages, I proceed now to the consideration of the causes of this malady, the object of so doing being to direct especial attention to the *prevention* of a disease which tends to swell so largely the bills of mortality. The great vascularity and rapid development of the child's brain, which acquires, at the age of seven, maturity, as far as size and weight are concerned, render that organ highly obnoxious to inflammatory attacks from very slight disturbing causes. Children who are highly fed will get Inflammation of the Brain upon the occurrence of a common cold, a tumble, or from the irritation of teething, whilst in all it may be induced by the partial or entire suppression of the eruptions of Scarlatina and Measles; and I have known it occur in the course of an attack of Hooping-cough.

In the Appendix will be found interesting cases exemplifying this assertion. Wounds of the scalp, or of the cranium, or even violent contusions, not unfrequently give rise to this affection, as will also be seen in the appendix of cases. I do not find in healthy, properly-fed children that teething ever produces any cerebral symptoms worthy to be classed as Inflammation; but if due care be *not* exhibited in the rearing of Infants in respect to bathing, clothing, and feeding, then teething must also be enumerated among the exciting causes of this form of the Disease. The observance of those rules, which will be found elsewhere, will enable nurses and mothers to bring their little charges through the anxious period of teething unscathed; colds also may be avoided, and great carelessness alone can ever induce falls capable of exciting inflammatory action. The occurrence, however, of scarlatina, measles, and hooping-cough, cannot be so avoided; but the evil consequences which may result from them are at least to be prevented by timely and skilful medical superintendance. However slight the attacks may be, they should never be allowed to pass over without that surveillance.

With respect to tubercle as a cause of Cerebral

Inflammation, I am not disposed to contend that positive inflammation is never induced by the excitement of this foreign matter in the Brain; but from the result of very accurate examinations made with an especial regard to this circumstance, I am convinced that the irritation set up by these earthy depositions rarely runs into positive inflammation; and that when children die with tubercle in their brain, it is from disorganization brought about by the derangement of the vis vervosa, not from vascular excitement.

## TREATMENT.

Before proceeding to the *treatment* of this disease, it will be advantageous to consider again for a moment the nature of the lesion we have to combat. The activity and energy of the sthenic Inflammation which attacks the Brain of Children is alarming, and justly so, to all. It runs its course so rapidly, and produces effects so disastrous, that the budding mind of the Infant is quickly blighted, whilst the material parts themselves are rendered incapable of carrying on their wonted animal functions. It has been said by West, and Maunsell and Evanson, and Abercrombie, that Infantile Cerebritis or Meningitis is a

rare disease. This statement is due entirely to the jumble of names which, even in these estimable authors' works is still kept up. The classification which I have ventured with great diffidence, but with a confidence founded on large practical experience, to suggest, will enable me to include a number of cases which would have been by these authors set down as Hydrocephalus. The general course of the symptoms, the post mortem results, and the agents necessary for the treatment of Infantile Cerebritis and the Acute Hydrocephalus of the books being invariably alike, I feel confident that my classification will serve to simplify the study of these diseases, and to render, I fully hope, the treatment I am about to propose serviceable, from being rightly as well as rapidly administered.

Having observed the symptoms which have been enumerated, and contrasted them with those which will be given when speaking of "Irritation of the Brain," and thus having assured ourselves that it *is* active inflammatory action we have to treat—not a moment should be lost: the remedies, active themselves, should be actively administered to counteract an active malady. Two or three or four leeches should be immediately applied to the

temples, the subsequent bleeding being sustained by warm fomentations for half-an-hour; then light muslin rags, saturated with iced water, should be applied, not occasionally, as is the custom with nurses, but assiduously, constantly, every minute, if, as is generally the case, the heat of head be so great as to quickly elevate the water to its own temperature. While this is going on, calomel should be pushed into the system, and continued unsparingly until the symptoms are subdued. Most beautiful is it to witness the results of this vigorous treatment. The calomel, although given in 2-grain doses every hour at first, and subsequently every two, three, and four hours as the required effect is produced, never, in the numerous cases I have thus treated, has caused the least after bad consequence. The symptoms are all rapidly subdued, leaving only a debility which judicious dietetic management and some gentle tonic such as Calumba will readily overcome. This is the course of events when the treatment has been had recourse to sufficiently early to stop the accession of the second or collapsed stage of the disease. In the event of this coming on, the violent treatment that would save in the previous part of the disease would kill in this.

This secondary stage is one of great danger—the capillaries are blocked up, circulation is impeded, and the veins pour forth into the cavities of the skull and brain a serous fluid which presses upon the surrounding structure, and disturbs, if it does not annihilate, the functions of the brain. Here the Iodine and Chlorine Salts are of great value, as will be seen in the two or three cases I have selected from a number, in a large proportion of which the Iodide of Potassium especially has given me the most abundant satisfaction. Much careful observation is required to apportion the dose of this salt to the age and constitution of the patient, otherwise more serious injury may arise than ever Calomel, much as it has been abused, has produced. An infant of six months will not always bear half-grain doses three times a day, so violent will be the catarrhal inflammation produced in the mucous membrane of the fauces and nares, which, extending sometimes even into the stomach and intestines, produces sickness and diarrhœa.

By frequent visits the proper dose may be adapted to the individual case, and then I know of no more gratifying sight than the happy and rapid progress towards recovery effected by this

remedy. The little sufferer gradually throws off all lethargic symptoms, the eye begins to light up, and once more the little arms are extended to the watchful mother to receive her fostering caresses.

## RESULTS OF TREATMENT.

From the non-attendance of parties when the children have recovered, many of my notes of cases remain incomplete; but I find I have recorded fully the results in thirty-two cases of Cerebral Inflammation which came under my care in the *first* stage; of these three died in convulsions soon after being attacked; twelve run into the second stage; and the remaining seventeen were cured by the active treatment advised above.

Of twenty-five cases, including the above twelve treated in the *second* stage with Iodide of Potassium, fourteen were restored. This experience, considering the general impression both in the profession and amongst the public, of the hopelessness of all treatment in this malady, justifies me in urging the great value of vigorous depletory measures in the first stage, and of the Iodine treatment in the second.

## PATHOLOGY.

Out of the forty-five cases which I have especially noted there have been thus fourteen deaths, and in eleven of these have I had the opportunity of inspecting the condition of the various organs of the body. In all I found more or less of opaque lymph on the surface of the hemispheres, and at the base of the Brain The vessels of the pia mater were in all highly injected, and the vascular points in the sections of the Brain very numerous. In two cases the serous effusion was absent, in the rest it varied in amount and in situation. In six cases there was an inflammatory blush in the lining membrane of the ventricles, and in these the effusion was principally confined to those cavities. Ramolissement of the fornix, septum lucidum, and corpora striata, was remarked in two of the three children that had sunk rapidly in convulsions, as well as in two of the other cases. Being anxious not to fatigue the reader with a prolix account of the other organs of the body, I shall content myself with stating that generally the Brain alone was the seat of disease, and that in none of these cases was there any tubercle found in any organ.

As a resumé of this first division of my subject, I submit the following conclusions to the consideration of the reader.

1stly. That Inflammation of the Brain exists without effusion, and that consequently the term Hydrocephalus is misleading.

2ndly. That Inflammation of the Brain in children is not an uncommon disease.

3rdly. That Inflammation of the Brain in children is perfectly under the control of medicine if quickly, actively and rightly administered.

4thly. That even in the second or collapsed stage of the disease there are remedies which will avail in restoring half the patients we have to treat.

And lastly, that active Cerebral Inflammation in childhood does not return more necessarily than does inflammation of any other organ.

# CEREBRAL IRRITATION.

Symptoms—causes—treatment—results of treatment—pathology.

IRRITATION of the Brain is the term I propose to employ as most justly applicable to that disordered condition of the cerebrum known in the books by the names "Hydrocephalus," "Sub-acute Hydrocephalus," "Strumous Hydrocephalus," and "Chronic Hydrocephalus." I hope to be able to shew, by the history, symptoms, treatment, and pathology of this very prevalent affection, that the distinction between Irritation and Inflammation is as clear as it is important—that these two contrary states of the system all who are engaged in the treatment of infantile disease should know at once to distinguish. The well known fact that nearly one half—about three-sevenths is the number—of the children born in this country die before they attain the age of five, is attri-

butable, in a very large extent, to a congenital tubercular deposit, in one or all of the tissues of the body. This tubercular matter—composed of earthy substance, phosphates and carbonates of soda and lime, distributed in minute particles through all parts of the body, the lungs, the bowels, the stomach, the skin, the glands, the brain, and even the heart—takes its origin according to observations devoted especially to this subject, from either one or the other of the parents.

If the child so born be placed under the most favourable circumstances as to light, and air, and exercise, and food, and clothing, and general good nursing, the constitution will become so robust that these minute deposits, literally the "seeds of disease," will be absorbed into the circulation and carried away with the excretions. But if, as is most commonly the case in the poorer, and even the middle ranks of society, owing to the impure atmosphere of our dwellings, the deficiency of light, the errors in food and ablutions and clothing, the constitution be not so improved, then will the minute tubercular matter ferment as it were; each point of earthy matter becomes sooner or later a nucleus

of irritative fever, the functions of assimilation, secretion and excretion are deteriorated, the stomach occasionally even ejects its contents, the bowels and liver are most capricious in their actions; sometimes there is an exhausting diarrhœa with green bilious stools, at others an obstinate costiveness, with light clay-coloured evacuations; a teazing cough shews irritation in the pulmonary organs; a dry skin, not unfrequently affected with some of the numerous eruptions to which these children are obnoxious, is present; the secreting and non-secreting glands may be enlarged; the joints, especially the wrists and ankles, shall become swollen and painful; and lastly, the nervous centres, the Brain and Spinal Marrow, are implicated in the universally deranged condition of the whole body. Should the latter be principally affected, convulsions constantly recurring will in all probability carry off the patient, especially if it be very young, and the previous inattention to its condition shall have been very great. These terminations are sometimes very sudden and very shocking, as they occur when quite unexpected by those who are in charge of the infant.

SYMPTOMS.

When the brain begins to suffer, the earliest symptom noticeable is a slight contraction of the brow, which gradually grows into a decided frown. This is a diagnostic mark peculiarly characteristic of Irritation of the Brain. The general health has been declining gradually for weeks or months —perhaps an attack of Scarlatina or Measles has left a debility and restlessness which has never been entirely overcome. There shall be wasting of the flesh, loss of appetite, capriciousness of temper, inaptitude of exertion. Often and often do parents bring their children to me in this state, saying "my child is not ill, and yet he is not well;" every thing the child does is done sluggishly; the natural functions are performed languidly; exacerbations of fever occur occasionally, and then the pulse is fluttering, rather than quick, and very soft and compressible, the tongue is almost always pale, and sometimes coated with a dirty white fur in the centre. A cough is very frequently the especial symptom which has attracted the attention of the nurse, and caused medical advice to be sought: this, it will be found upon a careful physical examination of

the chest, is not dependent upon any inflammatory affection, but is only a symptom of that general irritability of the nervous and muscular fibres which concentrates itself eventually in the Brain. Here is a resting place: the first stage of "Irritation of the Brain" is complete. It is a distinct, definable affection. It is not Remittent Fever; it is not the Fever of Dentition; it is not Cerebritis or Meningitis; it is not Hydrocephalus for no effusion has taken place, although the Brain is in that state which would obtain this appellation amongst practitioners in general. It *is* the first stage of Cerebral Irritation, and is most certainly and entirely under the control of remedial agents; and now is the happy time to apply them, before those other and less controllable symptoms of the second stage, which I am about to enumerate, set in.

In the second stage of this disease, coma and headache become more prominent; the frown is marked and permanent; squinting, deafness, and muscular contortions amounting to convulsions, will be remarked; vomiting after food is very common, and opisthotonos or emprosthotonos sometimes manifests itself. The head in this stage is hot, although not very remarkably so;

the eye is generally deficient in expression; and when asleep it is turned upwards, the lids being partly unclosed. The third stage of this malady is painful to witness, or describe; sometimes convulsions will succeed convulsions, until death puts a period to them rapidly; at others the little sufferer will lie upon its back, breathing with a stertor, rolling its head and moaning slightly, and so continue for days and days, until tired nature gives up all further struggle; or aphthous ulcers will appear on the lips, and cheeks, and tongue, and, running throughout the intestinal canal, prevent the absorption of all nourishment, and so stop the vital principle. This stage it is which is the true Hydrocephalus: effusion has taken place within and around the brain, and considering also the ramolissement, which in the majority of cases the post-mortem examinations disclose, it will not be wondered at that almost all remedies in this advanced stage of the disease cease to avail.

## CAUSES.

These are indeed most manifold, for so sensible of nervous impressions is the young Infant, that if he inherit weakness from his parents, the

natural variations of temperature and the slightest indiscretion in diet will be sufficient to set up Cerebral Irritation. The most common causes are teething; insufficient nourishment from the weakness of the maternal supply; anæmia from whatever cause; contusions; the debility succeeding fever or inflammations or diarrhœa; injudicious bathing, and clothing, and feeding, whether in deficiency or excess; suppressed evacuations; the use of narcotics, and the development of tubercle—the latter being the most formidable of all, and requiring generally some special stimulus: any of the other causes mentioned, for instance, in order to induce it to manifest itself.

Of the causes indicated perhaps anæmia is the most constant in all classes of society. Amongst the poor, the custom of suckling long in order to prevent re-conception is a frightful source of debility both to parent and child; but yet the certain occurrence of disease and premature decay in both fails to deter the mother from this baneful practice.

This long-continued draining from the maternal fount of a fluid which has but small nutrient properties, owing to the insufficient digestive

powers of the mother, leaves the child, after the process of weaning has been reluctantly commenced, so weak, flabby, and exsanguinous, that the food which is its lot, cannot be digested, and properly assimilated to the tissues of the body; the mesenteric glands become thickened and obstructed, and the nutrient particles which do struggle through them, form a thin, watery kind of blood which wants life and energy to supply the muscular system and enable the material to control and preserve in its due proportion that apparently immaterial portion of us—the nervous power—which is most active when blood and muscle is most subdued. Not solely to the poorer classes is this noxious habit of long-continued suckling of Infants confined: I have witnessed it in the middle and upper ranks of society; and I have known it persevered in against all the exhortations of friends, from a morbid fancy, arising certainly from the most beautiful feelings of woman's nature, namely, that as the child was sickly, what could possibly be so good for it as its mother's milk?

All children at nine months should be weaned. This should be a golden rule with mothers and nurses. Were it carried out, then would the

mortality of children, and the uterine diseases of women, now known to be so rife, diminish fourfold, and civilization would be rid of some of its greatest penalties.

Much reformation has been effected by medical men in the clothing and feeding of Infants. The experience of each day testifies how greatly the sickness and mortality of childhood has been brought about by the false hygienics traditionary in the nursery, but still is there a great revolution to be effected before we shall get rid of the nimia diligentia of civilization, and those masquerade costumes in which bad taste, and a falsely directed maternal pride, array their puny object. The mummy-like swathing of the infant is less practised of late, owing to its condemnation by the profession; but in these matters it is very difficult to obtain obedience from nurses who have practised the baneful habit all their lives. It is against the head-gear, however, that I would especially here enter my most vehement protest, since I have witnessed instances innumerable, where, to hot, heavy hats and caps and bonnets, together with a profuse cultivation of the hair, may be traced the most dangerous attacks of Irritation, and even in some instances Inflamma-

tion of the Brain. I have sometimes had the curiosity to weigh the cap, and the hat with its nodding plume, which a poor little patient has been ignorantly doomed to carry on its head; and in several instances have I found it to weigh from one to two pounds, the substance being frequently of flannel. It does not require much argument to show how, in children having the slightest tendency to head-affection, such heavy, heating helmets must develope disease, or that nervous irritability which is peculiar to the children of large towns.

### TREATMENT.

In the first and second stages of Cerebral Irritation the most sanguine hopes of a happy cure may be justly held out to the anxious parents. Let the child be placed in airy rooms, well regulated as regards temperature and cleanliness; let the diet, if the child be no longer suckling, be composed of tops and bottoms boiled in milk and water, slightly sweetened, for breakfast; some of Bullock's Semola, boiled in light beef-tea, for dinner; whilst gruel, or ground rice, or baked flour, according to the state of the bowels, should be ordered to be given in small quantities during the other periods, every two hours being the proper interval

for feeding young children, care being had that the quantity taken is apportioned to the powers of the Infant. Older children who are accustomed to animal food must not be deprived of it; but it should be well minced before they are allowed to eat it, or, in some cases, the stomach will require that it be stewed down, and that the soup only be taken, into which the Semola may also be advantageously introduced. In thus giving the first place to Diet in the treatment of this Disease. I have unconsciously shewn how highly necessary to a fortunate result I conceive a good regimen to be, and how much it contributes to the beneficial action of the medicines I am now about to propose. In the first stage of this malady a complete evacuation of the bowels, and the extermination of worms, if such there be, should precede all other treatment. This being effected, we have to weigh the requirements of the constitution of our patient, and to note carefully the amount and character of the irritability we have to subdue.

As the highest order of the vegetable kingdom approximates the lowest of the animal, so the disease under consideration shall approach an inflammatory condition of the Brain on the one

hand, and on the other, that state of torpor which is described by an ingenious American author, Dr. Nichol, under the name of "Erethysm."

In true Irritation unaccompanied by fever, Iron (and the best form is the sesquioxide administered in honey or treacle) is a sovereign remedy. In a few days under its influence I constantly see all the symptoms of the first stage disappear; but should there be any feverish symptoms present, then the Chlorate of Potassa, dissolved in water, acidulated with Hydrochloric Acid, should be given in doses proportioned to the age and constitution of our patient. The form I am in the habit of employing is—

| | |
|---|---|
| Chlorate of Potash .. | 1 drachm |
| Hydrochloric Acid .. | 6 minims |
| Water ..... | 2½ozs. |
| Syrup ..... | ½oz.—mix. |

And let a child of—

| | | | |
|---|---|---|---|
| 6 months take | 1 | teaspoonful | 4 times a day. |
| 1 year ..... | 2 | „ | „ |
| 2 to 3 ..... | 2½ | „ | „ |
| 3 to 5 ..... | 3 | „ | „ |

If the temperature of the head be high, it must be subdued by the usual means—iced water, &c., whilst the feet and extremities generally will re-

quire to be kept warm. In the large majority of cases thus managed there will be no occasion to vary this treatment. Perseverance will sometimes be necessary for several weeks, but our reward will come in the eventual cure and entire re-establishment of the little patient's health upon a more solid foundation than that he possessed before the attack. Of this I am enabled to adduce most satisfactory and numerous examples.

If the second stage of this disease shall have supervened when we are first called upon to advise, then, having acted upon the precaution previously mentioned as to the bowels, I immediately afterwards proceed to administer the Iodide of Potassium, beginning with half-grain doses, three or four times a day, to a six months' child, and gradually increasing it, until the specific effect, viz.—coryza, is induced. In some cases where the liver seems to need a stimulus, and the head is very hot, the Hydrargyrum cum Creta, or even a dose or two of Calomel, must not be omitted; but with safety and confidence the general dependence should be placed upon the specific effect of the Iodine, after which all alarming symptoms will subside, and Iron, as in the previous stage,

or a gentle tonic, such as Gentian or Calumba, is all that will be needful to restore the child to its customary amusements. Blisters to the nape of the neck are at times useful adjuncts; but I hold that bleeding in any form can never be desirable in "Irritation," however it may be and is in "Inflammation of the Cerebrum."

But little can be said respecting treatment in the last stage of Cerebral Irritation; that stage in which effusion has decidedly occurred, and disorganization has also probably taken place. To support the system by the administration of the most nutritious diet in the smallest compass is the chief indication, and to this end the administration of Ammonia, or Wine even, will in some instances contribute. One article of diet I would especially mention, because it is not generally thought of, namely, an Ice-cream. The parched mouth of the little sufferer is sensible of the gratefulness of this cooling food, and in general will take it when every thing else is rejected. The only medicines likely to be of any avail are the Iodide of Potassium and the Chlorate of Potash.*

* Note.—Whilst this sheet is passing through the press, a very remarkable case has occurred to me, shewing the singular powers of Iodine even in the last stage of this disease; for the particulars of which, see the last case in the Appendix.

## RESULTS OF TREATMENT.

I have preserved notes of thirty-six cases of Cerebral Irritation arising from various causes, twenty-eight of which terminated favorably. Eight were cases in which anæmia was the predominant exciting cause, and in these the Sesquioxide of Iron alone effected the cure. In nine, fever being present, the Chlorate of Potash was beneficially employed, followed by Cod-liver Oil; and in the remaining eleven, the Iodine treatment, sometimes with, sometimes without Iron, effected the restoration.

I take the opportunity here of quoting from the "*Provincial Medical Journal*" of 1848 an interesting case of Cerebral Irritation, called in the report "*Acute Hydrocephalus,*" and treated at first upon antiphlogistic principles, but subseqently cured by Iodine. In this case the false nomenclature is preserved, and it was only by accidental and experimental empiricism that this child was rescued from the fate which befalls so many others, and will continue so to do until the important distinction between Inflammation and Irritation is fully recognized in the adult as well as in the child, but most especially in the lesions which occur in the brain of the young. This instructive

case occurred in the practice of Dr. Copeman, and was recorded by him in the following terms:—

"*Case of Acute Hydrocephalus—Iodine—Cure.*

"W. M.——, aged six years, of scrofulous habit, well but delicately formed, of quick perception and excellent memory, with a remarkable fondness for reading and study, has almost from birth been subject to slight convulsive actions, starting during sleep, and awaking with a scream, but in other respects had enjoyed good health until about the beginning of April, 1847, when he began to lose his appetite, his bowels became deranged, and his sleep more troubled. On the 18th he was attacked with violent purging, which, however, soon ceased, but he became very restless and feverish, and complained of pain and heaviness in the head. For several nights, and frequently in the course of the night, unless constantly watched, he jumped completely out of bed, screaming violently. A purge of Hydrag. cum Creta and Scammony was given, and acted freely, cold was applied to the head, he was put into a hip-bath, and ordered to take small doses of Calomel and Antimony, and a mixture of Acetate of Ammonia.

"This treatment was continued for ten days, but his appetite failed, and he became stupid,

sitting for hours with his chin upon his breast, and not answering questions unless previously roused by a loud noise, or by shaking him, when he started and appeared frightened, but answered collectedly, although very briefly, and in a peevish tone. He complained of no pain, and was not feverish. Pulse very small and frequent; tongue covered with white fur, but moist. Blisters were applied behind the ears and at the back of the neck, the Calomel and Antimony continued, and, as he took no food and appeared very feeble, a mixture of Bark and Ammonia was prescribed. The bowels being costive, aperients were from time to time given.

" About the 29th, he began to complain that he could not see distinctly, and at the same time his speech became very difficult, so that he could hardly be understood, and his hearing was also greatly affected. In a few days he became quite deaf, to all appearance blind, and when he attempted to speak, which was very seldom, he could not be at all understood. The pupils were widely dilated, and the pulse hardly to be felt at the wrist. While in this state (about May 2nd), he was ordered five drops of Lugol's Solution of Iodine every four hours: two days afterwards he

became more sensible, could hear a loud noise, and took food. The Iodine was continued, the dose being gradually increased; and he recovered, by degrees, the senses of which he had been deprived, being in better health at the beginning of June than before the attack.

"He has remained in good health up to the present time, September 1848."

## PATHOLOGY.

It is not intended here to describe minutely the exact seat, in each individual brain examined after death, of the lesions found in children dying from Irritation of the Brain, the result of tubercular deposition. Many enquiries have been prosecuted to define the seat of the supposed inflammatory state, whether it was in the membranes, at the base of the brain, in the membrane lining the ventricles, or in the softened, pulpy mass frequently found in the centre of the brain. The quantity of effused serum too has been measured, and compared, and carefully noted. Were it possible to weed these records, and set on one side the cases of real sthenic Inflammation, and on the other those of anæmic tubercular Irritation,

then would I avail myself of the large collection of post-mortem examinations presented to the world by Gerhard, Abercrombie, Schweningen, Bennett, Cheyne, Gölis, and numerous others. This important distinction never having been attempted, the value of these records, as guides to the just definition and treatment of these diseases, is painfully small, and much valuable time has, I fear, been mis-spent.

Out of thirty-six cases of asthenic Cerebral Irritation which I have carefully noted, eight only have died, and in each case I have been enabled to make a careful examination into the condition of all the organs of the body. In six I found more or less effused fluid distending the skull itself; in one case the brain swimming almost in the limpid serum, whilst in others the ventricles only were distended. The quantity varied from half-an-ounce to six ounces. In two cases there was no effused fluid. The membranes covering the brain, were in all, more or less studded with whitish, opaque, granular masses; sometimes clustered, and at other times dotted about singly; the deposit being most remarkable in the immediate neighbourhood of the sinuses. The arachnoid and pia mater were in five cases

opaque and thickened, and in one case so agglutinated were the two membranes as to enenable me to strip them from the cerebral substance together, almost in one mass; and when these membranes were separated the tubercular cheesy matter was found between them. Upon slicing the brain, the vascular points had a venous appearance and were by no means numerous, in this respect differing materially from the brain which has suffered sthenic Inflammation. In two cases only were there any evidences of tubercle *within* the cerebral mass, and in both these cases some ramolissement had taken place around the tubercular matter, which was deposited in one case in the right hemisphere, and in the other in the right corpus striatum. There was softening of the central parts of the brain also in four other cases. In four of the six cases in which effusion was present, the lining membrane of the ventricles was more or less opaque and thickened, but in none was there any increase of vascularity; on the contrary, these membranes, as well as the choroid plexuses, were remarkably exsanguinous. In the writings of those who have treated of tubercular Hydrocephalus, the base of the brain has generally been charged

with the greatest amount of mischief; but according to my observations the tubercular deposit is quite eccentric in its choice of station,—with this exception, that the vessels and sinuses of the brain are sure to have some large share in the allotment. My experience is in accordance with that of Gerhard, Schweningen, West and Abercrombie, respecting the presence of tubercle in the other organs of those children who die from tubercular disease of the brain. In the eight cases recorded above, the whole of the organs of the body were carefully examined, and tubercular matter invariably found in the lungs, in the mesenteric glands, in the liver, or in some other part of the system.

Reviewing these observations upon the causes and progress of that malady which I have denominated *Cerebral Irritation*, as distinguished from *Cerebral Inflammation;* taking in connection with those observations the post-mortem results which I have recorded; remembering that the pale softening of the brain observed in these examinations, unattended with any aggregation of congested vessels in the neighbourhood of the softened portion, has been observed in other cases by Recamier, Rostan, and Andral, and

attributed by them to either obstructed vessels, or insufficient nutrition, not to Inflammation; I trust I shall be exonerated from the accusation of presumption in having set up this classification of Inflammation and Irritation upon data which may perhaps require to be corroborated by further observation, but which have been most carefully noted, and are even in themselves not insufficient indications of the truth that Hydrocephalus, acute, sub-acute, chronic, and strumous, Hydrocephoid Disease, &c., are all verba non res, which, pointing to the latest results of a perhaps long existent malady, lead the young practitioner to overlook those early symptoms by the due treatment of which "Water on the Brain," that terrible slayer of children and justly alarming bugbear of parents, may and ought to be controlled, and the disposition thereto—notwithstanding the assertion of Dr. West, that this disease is rarely cured, and almost invariably returns—thoroughly eradicated.

## DIAGNOSIS.

It will be useful to bring into immediate contact the broad lines of distinction which divide these two diseases of the Infant Brain, in order that it may be seen how opposed is their nature, and how ruinous any treatment must be which is not founded upon this natural distinction. *Inflammation* of the child's Brain is sudden and violent in its onset, rapid in its progress and termination; *Irritation* on the other hand is insidious in its attack, tardy in its course and terminations. The eye in the former is bright, vigilant, and restless; the pupil is contracted, and sometimes the conjunctiva injected. In the latter the eye is dull, without speculation, and fixed in its vacant gaze at nothing; the pupil is dilated, and the conjunctiva is never injected. The pulse has not generally been considered a faithful guide in the diseases of children, but in this instance it may be much relied on. When Inflammation is present we shall always have

a full, hard, resisting, sometimes bounding, and quick pulse, whose force will call imperatively for depletion. In Irritation, a small, weak, unresisting, but very quick and perhaps fluttering pulse, will demand assistance, and nutritious support. In the sthenic disorder the child has been in excellent health just previous to the attack; in the asthenic he has been growing listless, and thin, and peevish, for days, perhaps weeks before these changes have been attributed to disease. Many of the symptoms are common to the two diseases—such as the convulsions, sickness, intolerance of light, pain and heat of head, &c., but they will be invariably more violent in the vascular than in the nervous disorder, and the marked differences enumerated above will be amply sufficient to help us to a faithful Diagnosis in this important distinction.

As in all other allied disorders, and indeed in every thing in nature, there are modifications which exhibit a tendency to confound one affection in the other. Some one or two important symptoms will however never fail to be present to guide us through the labyrinth—as locomotion marks the animal from the vegetable kingdom—and upon these must we take our stand. To

describe these approximations and modifications would oblige me considerably to extend the space I have allotted to myself in this treatise, and moreover would not, I fear, supply that perception of minor distinctions which is certainly not unimportant when considering the treatment of such delicate frames as those who are our patients in these instances. This perception must be acquired by actual observation, carefully, untiringly, patiently, steadily, and above all good-humouredly pursued by the side of the cot or cradle of the little sufferers.

With regard to these oscillations between Inflammation and Irritation, I will content myself with one remark, and that shall be to entreat that no blood be drawn until the former be pronounced and decisive—by no means if the lips and tongue be pale, or the pulse weak and unresisting. However high the temperature of the head, cold will always reduce it, and can in no case do an injury; whilst the abstraction of blood, if employed when the nervous system is excited, will increase the Irritation, and hasten that ramolissement and effusion which a contrary treatment would have wholly prevented.

## PRECAUTIONARY AND PREVENTIVE MEASURES

to be adopted when the child's Brain is threatened with or after it has been subjected to Inflammatory and Irritative Disorder.

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To keep the head cool should be the great concern of all who have children threatened with Cerebral Disease. When in the open air, the hat or bonnet should be of the lightest possible texture, and within the house the head should be free from all covering. In the event of the temperature of the head rising above that of the rest of the body, it should immediately be subdued by the affusion of cold water, to which a dash of vinegar may be added, but never spirit: heat being always developed upon the admixture of spirit and water.

During the process of teething, much watchful care will be requisite; but the temperature of the head, and the appearance of the veins of the

scalp, will always give warning of any approaching necessity for medical interference. The bowels should of course be properly attended to—an aperient being occasionally beneficial. Should there be Diarrhœa, aromatics absorbents or alteratives will require to be administered. When a tooth is all but through the gum, and the latter is tense and inflamed, and the Cerebral Irritation is making any progress, I am in the habit of employing the lancet; but I am loth to interfere with nature in this matter without good and valid reasons, and in weakly children especially we should be very cautious how by lancing the gums we run the risk of much loss of precious blood.

The invigorating and tranquillizing influence of fresh air should be sought as often as our varying climate will permit. The threatened child must not be submitted to cold north or north-east winds; but if he be clothed according to the weather, he should not be kept in doors for slight causes.

The tepid bath will be grateful and beneficial up to two years of age; after that, a gradual approximation to the cold bath will induce a habit, than which nothing so tends to improve

an originally weak constitution, or to preserve in health those who are naturally strong. With respect to food, up to nine months old the Infant best thrives upon its mother's milk; after that, of the great variety of farinaceous food which is manufactured for the use of children I know of none so suitable to almost every stomach as the tops and bottoms, given either with or without milk; but for a weakly child I strongly advise two meals a day of Bullock's Semola, a pleasant and very nutritious food, of which small quantities only need be taken, so that the stomach is not over-burthened with a bulky, innutritious substance, as is the case with arrow-root and the other starchy compounds. Cerebral Irritation is so often the result of anæmia induced by defective nutrition, that I am frequently obliged to order animal broths to even very young children, and to those of from two years of age meat itself, care of course being taken that it is well minced before being administered.

By the adoption of such easy measures of precaution as are here set down, few are the children who should need the aid of nauseous drugs. Prevention is not only better than cure for the patient's sake—it is a higher aim, a more

benevolent object for the exercise of the medical intellect. The time is not far distant when our schools will endow Chairs of Preventive Medicine, and that member of our fraternity will deserve and obtain most honor amongst his patients who, by his advice, shall shew them how to prevent those maladies which in the cruder state of medicine he was called upon to cure.

# APPENDIX OF CASES.

In selecting the following cases for the purpose of illustrating the views I have propounded, it has been my aim to economize space and time in the description of the symptoms and treatment, as well as to give specimens only of the various modes and causes of attack. The wearisome recital of numerous cases, all having the same features, has been studiously avoided.

## INFLAMMATION.

### CASE I.

*Cerebral Inflammation, induced by Sun-stroke. Recovery.*

Emma M——, aged 4 years, robust and florid, was seized, after playing for some hours in a "broiling sun," with severe headache, which increased during the night. On the following morning, when I was summoned to visit her, I

found considerable contraction of the pupils, a frown upon the brow, the hands raised to the head and pressed firmly upon it, whilst it was rolled from side to side in evident anguish. The face was flushed, the skin hot and dry, the tongue parched and highly vascular, the lips red, the conjunctiva slightly injected, the pulse full, hard, and frequent, and the face was buried as much as possible in the pillow, evidently with the intention of excluding the light. In this case, taking into account the rapidity of the attack in a child enjoying previously the most perfect health, there was no room to doubt the acute nature of the disease, or to waver as to the treatment necessary. Six leeches were immediately applied to the head, which was shaved, and ice employed after the leeches had performed their function. Calomel in two-grain doses was ordered every two hours. The room to be kept darkened, all noise to be prevented, and the lips moistened occasionally with iced water. Upon repeating my visit soon after the application of the leeches, I found that all my directions had been happily carried out, and the result was relief from the previous restlessness and constant motion of the head, and there was some slight dis-

position to sleep. Two hours after this visit, a copious bilious evacuation tended still further to relieve the system, and by night-fall this child, but a few hours before writhing in the intense suffering of cerebral inflammation in its acutest form, slept peacefully for four hours. Upon making my visit the next morning, I found that light had been admitted to the apartment; the child, being peevish, had been allowed to sit up and take bread and milk for breakfast, "to strengthen it," as the mother called it. The result of this disobedience to my directions was a renewal of the pain in the head, with vomiting. The darkened room, iced water alone to drink, iced water to the head, and a continuance of the calomel now every three hours, again overcame the malady, and the night was passed in quiet but broken slumbers. For the next two days this system—the calomel alone being gradually diminished—was assiduously persisted in. On the morning of the fifth day some light was admitted, and the calomel entirely suspended, as well as the ice to the head. On the morning of the sixth day the eye could bear the full light of day, and all the cerebral symptoms had departed, leaving only some debility, for which the Chlorate

of Potash with Hydrochloric Acid was prescribed. A week after this time I left my patient perfectly well.

The Calomel given in this case amounted to thirty grains; no salivation was induced, and no other apparent evil resulted. There were copious alvine evacuations which doubtless contained the mineral after it had done its work upon the liver. I record this case especially to show how acute diseases require acute remedies, and how surely they will yield if vigorously followed up.

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## CASE II.

*Cerebral Inflammation from Injury to the Head—Concussion. Recovery.*

Wm. H—, aged 14, was brought to the Hospital Feb. 6, 1847, and when admitted was in a comatose condition produced by a fall from a cart, was partially sensible when roused, and made complaint of his head. The skin was cold; pulse and heart's action feeble; pupils dilated, contracting however on exposure to strong light.

He had not been in Hospital long before he vomited the contents of his stomach. Having been wrapped in warm blankets, and the head being kept cold by means of evaporating lotion, reaction came on in the night, and the next morning, Feb. 7, the skin was both warm and moist. The symptoms of concussion however were still present. It became necessary to empty the bladder by means of the catheter, there being temporary paralysis of that viscus. The pupils remained sluggish in their action, and the coma also continued. Complains of headache. Vomited some greenish fluid. No action on the bowels. Temperature of head greater than natural. Ordered to continue the cold lotion, and take immediately 3 grains of Calomel and 10 of Jalap, to be followed by an enema of Turpentine containing half an ounce of the oil.

Feb. 8. Slept during the night. This morning he started suddenly from his sleep three times, and talked incoherently. Complains of pain across his forehead; pupils are dilated, and the conjunctiva unnaturally bright, that of the left eye being injected; the sickness is not so distressing as yesterday; bowels have been twice relieved; pulse 78, occasionally intermittent.

Ordered twelve leeches to the head, continue cold lotion, and take three grains of Calomel every four hours as a purgative.

Feb. 9. The leeches drew a considerable quantity of blood; the bowels have been freely evacuated; the night has been passed tranquilly, sleeping at intervals, and this morning he reports his head much relieved. For the next three days he was kept in a darkened ward, the Calomel was continued in smaller doses, and then, all head symptoms having subsided, he was made an out-patient for the purpose of restoring his strength by means of a tonic, and of watching him lest any further symptoms should appear, as is sometimes the case if great care be not observed with regard to diet and exertion. All however went on well for two weeks, and then he was discharged quite well.

This case of Inflammation following Concussion of the Brain without any fracture of the skull is one of a class by no means uncommon in surgical practice, and it is one which requires nice discrimination to apply the active depletory measures only when sthenic inflammation is setting in, and not during the collapsed stage, as well as to adapt the amount of depletion to the

individual constitution under treatment. The after watching of the case is also of the highest importance, and the tonic should by no means be omitted. Nature requires a fillip, else there will be danger of the debility becoming permanent, and of the brain taking on asthenic irritative action.

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## CASE III.

*Cerebral Inflammation occurring during an attack of Scarlet Fever. Recovery.*

Jane W—, aged 3½ years, was seized with the usual symptoms of scarlatina June 8, 1849. When first seen by me the body was covered with the eruption, but it was of a more purple hue than I could have wished. This was on the 12th. The tonsils were inflamed and enlarged, impeding the passage of the throat, and thus obstructing the due ærification of the blood. On the 13th I found the child's brow contracted; the hands were frequently raised to the head, which was rolled from side to side; the pupils were con-

tracted and intolerant of light, the conjunctiva injected and bright; great heat of head, and of the skin generally; considerable thirst; pulse 140, full and rather hard, and great restlessness. Ordered four leeches to the temples, the head to be shaved and kept cool with iced water, and the rest of the body to be frequently sponged with warm vinegar and water. Two grains of Calomel and five of Jalap to be administered immediately, and subsequently one grain of Calomel with a sixth of a grain of Tartar Emetic every two hours. To be fed only upon arrow-root.

June 14. Obtained some sleep last night, and the head symptoms to-day are decidedly mitigated. Bowels relieved freely, skin more moist, and eruption more scarlet than yesterday. Continue the Calomel and Antimony and cold to the head, as well as the tepid sponging of the body.

June 15th. Throat still very troublesome, which caused a restless night, and, as a consequence, this morning the head is very hot, but the eye is not so bright or injected as it was. The hands, however, are still raised to the head, and the rolling and frown recur at too frequent intervals. The pulse 135, is less full, and slightly fluttering. Continue the Calomel without the

Antimony, and let the child have half-grain doses of Iodide of Potassium four times a day.

June 16. Eruption dying off; throat more comfortable; loss of restlessness; pupils still intolerant of light; and head symptoms slightly abated. Increase the dose of Iodide to three quarters of a grain, and discontinue Calomel. Keep up the cold to the head, and the tepid sponging of the body.

June 17. Passed a good night—some sneezing indicative of the specific effect of the Iodide. Head decidedly better. Continue the medicine twice a day, and use the cold to the head only in the event of its becoming hot. From this time the improvement went on gradually. The Iodide of Potassium was continued until the 20th, when it was changed for the Chlorate of Potash, with Hydrochloric Acid, and under this my little patient made a rapid recovery.

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## CASE IV.

*Cerebral Inflammation occurring during an attack of Hooping-cough—Symptoms of effusion. Recovery.*

James R—, aged 3 years, had been suffering severely from hooping-cough for three weeks.

When he was brought to the Hospital, September 4, 1849, I found the severity of the paroxysms had produced something more than mere temporary conjestion of the vessels of the Brain, and that from the quick, vivid restlessness of the eye, with a somewhat contracted pupil, and intolerance of strong light, there was active Inflammation coming on. The head was hot, the skin dry, and the bowels locked up. My first care was to re-establish these two important secretions by means of the hot bath, and Jalap and Calomel. On the next day I found the head still suffering considerably—the cough having tended to keep up the inflammatory action. Four leeches were now ordered to the temples, the head to be shaved, and cold applied. In the evening, the eyes were less restless, and there was some disposition to sleep. Ordered Calomel, one grain every four hours.

Sept. 6. Cough has been very troublesome; head very hot; moans and cries constantly; pulse 130, rather hard, passes but little urine. Ordered four more leeches, a warm bath up to the armpits, and ice to the head. Continue the Calomel.

Sept. 7. The eyes are this morning much duller than previously; the head is constantly

rolled; the pupils rather dilated; the skin hot and dry, and mouth parched; more urine passed after the bath; pulse very quick, and rather fluttering. The child lies on its back and sleeps restlessly, frequently starting, eyelids partly open. Ordered Iodide of Potassium, dissolved in water, one grain every four hours, and continue the ice to the head.

Sept. 8. Coughed much, and passed a bad night. Bowels confined. Somewhat quieter than yesterday. Continue Iodide, and give a Calomel and Jalap purge; persist with the ice.

Sept. 9. Slept more composedly last night, and this morning takes more notice. The eyes are resuming some of their lustre; the skin is becoming moist, and there is decidedly less rolling of the head. Continue Iodide.

Sept. 10. Improvement continues, heat of head diminishing; less cough; no longer lies torpidly on the back, but turns about, and sleeps with his eyelids closed. There is some coryza.

Sept. 11. Head symptoms have almost entirely disappeared. The coryza is rather considerable. Discontinue Iodide, and substitute the Chlorate of Potash, with Hydrochloric Acid. The subsequent progress of this case was very satis-

factory. The hooping-cough was very much diminished in virulence by the foregoing treatment for the Cerebral attack, which was very severe, amounting at first to sthenic Inflammation, and subsequently exhibiting symptoms of effusion. Happily, however, that most highly serviceable medicine, the Iodide of Potassium, removed this, as I have seen it do in so many other cases, where, from unfortunate combinations, or neglect, the earlier stage of cerebritis has passed into the later in which effusion has commenced.

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## CASE V.

*Inflammation of the Brain in a Child brought up by hand—Effusion. Death.*

W. B—, aged six months, was taken ill the 6th September, 1849. According to the history of the case given me by the father, it appeared that the child was in good health on the 5th, but passed that night restlessly; and on the morning of the 6th vomited, threw its head from side to side, cried as though in severe pain, and was very

feverish. The head was hot; the eyes very brilliant, and in constant motion, and intolerant of strong light. These symptoms were allowed to continue for two days, the only remedies adopted being aperients. On the morning of the 8th I was requested to visit the little patient, and found that the delicate powers of the young Infant were rapidly giving way under intense inflammatory action. Like all children who have not the benefit of the natural maternal nutriment, it was thin and flabby; the head was intensely hot; the veins of the scalp were distended; the pulse rapid and fluttering and weak, and the eyes beginning to lose their lustre, but not their watchfulness. This was a case in which I felt that the time for depletion had passed. Two days ago three or four leeches would have quickly cut short the attack, but now they would only increase that want of power which the Brain was beginning to exhibit. I consequently ordered the constant application of ice-water, a grain of Calomel every hour, half a gain of Iodide of Potassium every two hours, in some beef-tea, and a blister to the nape of the neck.

On the 9th I found that much quietude had followed the use of these remedies. The liver

had been acted upon and the system relieved of much green bilious matter, and the child had had some quiet sleep. Much neglect however was, I am sorry to say, exhibited towards this poor motherless child, with respect to the applications of ice, as well as in the administration of the medicines, to which I attribute the very unfavorable appearances which presented themselves upon my visit on the 10th. Squinting, with the film over the surface of the eye and a fixed dilated pupil, indicated serous effusion; a convulsive action of the mouth was also perceptible, and the poor child lay upon its back moaning piteously—the mouth and tongue were parched and the skin hot and dry. I ordered the surface of the body to be well sponged with warm vinegar and water, the head still to be kept cold, and an ice cream to be administered frequently with an occasional tea-spoonful of Lisbon wine. The convulsions however increased, and on the morning of the 11th, the poor little thing died. Having been permitted to make a post-mortem examination, I found great vascularity of the membranes and substance of the Brain, and in the central parts some slight amount of ramolissement had commenced. The ventricles and the base of the

Brain contained together three ounces of serous fluid. This case will serve to shew the necessity for *early treatment* in the diseases affecting the Brain in children. It is, I verily believe, owing solely to the neglect of the first stage of the disease, that this affection has come to be looked upon as so intractable and unsubmissive to treatment.

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## IRRITATION.

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### CASE VI.

*Cerebral Irritation connected with Tubercular Diathesis. Recovery.*

John W—, aged 6½ years, a pale flabby exsanguinous boy, the son of a phthisical mother, was brought to me at the Hospital, on the 16th April, 1850. Had complained of headache for several weeks; is listless in all his actions, and the natural secretions of the body are performed languidly and irregularly. Sometimes the bowels are relaxed but mostly the contrary. There is a short teazing cough, but no expectoration. He has become very thin of late, and has a most capricious

appetite — now ravenous and undiscerning, at other times delicate and capricious to an extreme. The countenance has an anxious, thoughtful, care-worn aspect, and the skin of the forehead is contracted into a frown by the corrugatores supercilii. The heat of the head is slightly above that of the rest of the body, the pupils are rather sluggish when submitted to a strong light, but the intellect is by no means obtuse, on the contrary he would appear to be rather a clever, as well as a quiet, studious boy. He is now complaining of severe pain over the forehead which at times seems scarcely bearable, so that he would knock his head against the wall if he were not prevented. His rest is disturbed by it, and when asleep the eyelids are only partly closed, and he is awoke by very slight causes. The tongue and gums are pale, the surface of the body is below the natural temperature, and the pulse is small, weak, and quick. I ordered a blister for the nape of the neck, to remove the severe pain the poor boy was suffering, a generous milk and meat diet, and one grain of Iodide of Potassium in half-an-ounce of Infusion of Calumba three times a day, with an alterative powder every other night.

April 19. The severe pains in the head are relieved, but this is the only improvement. Continue the medicines.

April 23. The frown is decidedly less, and the countenance generally more tranquil and pleasant, scarcely any pain referred to the head; appetite good—the milk night and morning and the meat for dinner being taken with a relish. He generally sleeps through the night now, and the eyelids are closed during sleep. The bowels have been somewhat relaxed during the last week, and there is some coryza. The tongue and gums remaining pale, I ordered the following mixture which I am in the habit of using in preference to the Iodide of Iron—a preparation I have found irregular in its action, and consequently not to be depended upon so certainly as this combination in which the sulphate is preserved as a proto salt.

℞ Ferri Sulphatis grs. iv,
Aquæ ʒ iij,
Acid Sulph. dil. m. xv,
Syrupi ʒ ij,
Misce bene tum adde
Potassii Iodidi grs. vj. M. ft.
Mistura cujus sumatur cochleare magnum ter quotidie.

April 26. The frown has entirely disappeared, and liveliness and activity both of mind and body have succeeded to the dull, heavy listlessness which oppressed him for so long a time. The appetite is good and regular, and the action of the bowels more uniform; slight coryza has continued. The tongue and gums and pulse are beginning to exhibit some improvement in the character of the blood. Ordered to be in the open air as much as possible without exposure to cold and damp and fatigue; to continue the same diet with the addition of fresh green vegetables; omit the Iodide of Potassium, which has done all its duty; increase the Iron to one grain for each dose, and take also a tea-spoonful of the Cod-Liver Oil before each dose of the mixture.

April 30. Improving in appearance; continue the remedies.

May 7. Has had some headache, which was removed by cold to the head and a brisk purgative. Continue the tonic treatment.

May 14. Looks well, but still pale and thin; no symptoms to complain of. Requested that if possible he should go into the country, and ordered him a supply of medicine.

June 18. Came to the Hospital looking ruddy and perfectly well—evidently enjoying life thoroughly, all the actions of the body as well as those of the mind being performed with vigour. The mother promised me that if he should in the least fall off from this healthy state she would bring him to me again, and as now (August 16) he has not made his appearance, I may hope that the renovation is permanent. The symptoms of Cerebral Irritation in this case were of an extremely asthenic character, as is usual in all patients having an hereditary tubercular diathesis, and I doubt not that some effusion had occurred. Had local depletion been adopted the result would certainly have been fatal. To excite the absorbent system to take up and throw out the offending tubercular matter, and to supply wholesome nutritious matter for the proper sustentation of the tissues—these are the two great indications, and in this case as in many others, they were most satisfactorily effected by the foregoing treatment.

## CASE VII.

*Cerebral Irritation in an Infant from the use of Narcotics—great emaciation. Recovery.*

A. S— was a fine plump child when born, but the mother being very weakly the infant was not suckled. According to the history given me, it appeared that the food which had been administered was either not sufficiently nutritious or not given in sufficient quantities, or not adapted to the digestive powers of the infant. At three months' old, diarrhœa and sickness had wasted the poor little thing to a skeleton, and a teazing cough was its constant companion. To relieve these complaints the routine treatment of Chalk Mixture and Syrup of Poppies was the only and constant remedy. As, however, the wasting, the diarrhœa, the cough, and constant peevishness continued in spite of the sedative, I was sent for to see the child, and found the symptoms already enumerated, together with great heat of head, and distention of the veins of the scalp. The cry was incessant and very mournful, and the cough hard and frequent; the head was in constant motion, the eyes were ever wandering and in-

tolerant of light; the whole aspect of the child was painfully expressive of prolonged suffering. So wasted and wretched did this poor thing look, that I confess I had not sufficient confidence in the remedies I was then employing in such cases to justify me in anticipating the highly favorable result which ensued. Having, however, in order that my treatment might be carried out with hopeful watchfulness, infused confidence into the minds of the parents and attendants in the successful issue of the remedies: I stopped the sedative, I discarded the arrow root and wine, I threw off great part of the suffocating clothing, especially the cap, and shocked the old nurse not a little by throwing up the windows, and allowing the breezes of Heaven to blow upon the heated brow of my unfortunate little patient. The good effect of this was immediately apparent, for the poor little thing became quiet and coughed less. I then ordered Iced Water to the head, and half-grain doses of the Iodide of Potassium four times a day; the food to be milk and water, thickened with a little ground rice well boiled. On the third day the coryza arising from the Iodide commenced, and then gradually the cough as well as the head symptoms began to subside; the

diarrhœa, however, continued, and the stools being very bilious, I ordered as a corrective a little Soda and Rhubarb every morning, but depended for improvement in this respect principally upon nourishment, which was to be given in the form of beef-tea every three hours. The dose of the Iodide to be given twice during the day only. This plan was proceeded with until the sixth day, when I found the head so much better that I was enabled to discontinue the Ice and the Iodide, substituting the Chlorate of Potash Mixture. The changed aspect of the child was extraordinary in so short a space of time: sleep was natural and quiet. The diarrhœa, although lessened, was not sufficiently controlled, so that as yet but little was gained in weight. I consequently suggested the employment of a wet-nurse, and procured one the next day. A week after this a considerable alteration had taken place. With the use of the breast-milk the diarrhœa quickly subsided—the cough had previously disappeared—and the highly excited state of the Brain was no longer present, although the blue prominent veins of the scalp remained as indications of what had been, and might be again, under favoring circumstances. The Chlorate of Potash was continued

for a fortnight, and then the little patient, lively and good-tempered and happy, was left to get fat upon the nutritious fluid proper to its age. And so it did; for in occasional attendances I have since had during teething, under which the head has been threatened with congestion, I have had occasion to remark how fine a child she had grown; and this continued long after the suckling, which was carried on until the tenth month, had ceased.

Here, again, the symptoms affecting the Brain closely resembled those of Inflammation, but the concomitant general circumstances indicated the asthenic nature of the local action. In this case the result of leeching would have been further depression of the vascular system, and consequent exaltation of the nervous, the certain consequence of which would have been convulsions, effusion, and death. The contrary treatment, however, succeeded far beyond my primary anticipations in restoring a case so apparently hopeless, and even after it had been almost abandoned as such by the physician who attended the mother.

## CASE VIII.

*Cerebral Irritation consequent on a severe attack of Diarrhœa. Recovery.*

Jane B—, aged 1½ years, was a tolerably healthy child until seized with Diarrhœa in the month of August, 1849. Simple remedies were employed for its removal, but having been continued without avail for a week, and a convulsive fit having greatly alarmed the parents, I was sent for August 19th, and found that the exhaustion produced by the continued drain of the diarrhœa had induced symptoms of Cerebral Irritation. The evacuations had been very numerous and considerable in quantity, and the reduction in flesh was very great. The head was now very hot, and the veins of the scalp remarkably prominent; the eyes were restless and bright; there was great peevishness, and a desire to hide the head so as to escape the light and observation, and the head was rolled from side to side. The sleep was very slight, and performed with the eyelids only partially closed. The whole surface of the body was pallid; the tongue was pale and furred, and the lips were pale. The pulse was quick, but small

and unresisting. The pale character of the evacuations indicating a deficient secretion of bile, I proceeded to stimulate the liver by means of a warm bath and Hydrargyrum cum Creta; Iced Water was ordered to be applied to the head until the temperature was reduced, and half-a-grain of Iodide of Potassium in two teaspoonfuls of an Aromatic Chalk Mixture to be given every three hours.

Aug. 21. There have been no further convulsions; several worms of the ascaris species have passed in the stools, and these have been much more healthy in their appearance, as well as more consistent and less numerous both yesterday and to-day; the temperature of the head is not materially lessened; the veins are less prominent and blue; less peevishness; eyes less roving, and the rolling of the head not so constant; the hands, however, are raised to the head frequently, and the desire to hide the head remains. The room has been ordered to be kept darkened, and cool and quiet. Continue the cold to the head, a warm bath up to the armpits each night, Hydrargyrum cum Creta gr. iij. every night, and the Iodide increased to one grain three times a day in simple water with syrup. Mutton broth

once a day, and rice boiled in milk and water frequently.

Aug. 23. The Bowels have now recovered their natural action, but the head remains about the same as on the 21st. Omit the Hydrargyrum cum Creta, and continue all the other remedies.

Aug. 25. Coryza has set in rather violently; much sneezing and coughing, and the bowels are again much relaxed. The heat of head is greatly reduced, and when asleep the eyelids are perfectly closed; the rolling and tossing of the head has ceased. The flow of urine, which had been deficient, is now much increased. Ordered all medicines to be discontinued, the head only being kept cool with the Ice in the event of any necessity. Good nourishing food to be administered. Beef-tea and mutton-broth, with Bullock's Semola, and bread and milk. The room still being kept moderately dark.

Aug. 27. The coryza and diarrhœa have nearly passed away. The child is lively and cheerful again, and is even already beginning to pick up flesh. There are no head symptoms.

Aug. 30. Has continued to progress well. This is one of a very numerous class of cases in

which the exhaustive action of diarrhœa has brought about that anæmic condition of the system to which is due the irritable state of the Brain here exhibited. I could mention instances in which I have seen the head leeched repeatedly, and with, of course, the usual fatal result, but think it more likely to advance the cause I have undertaken to give this specimen of the beneficial action of treatment directed against over-action of the nervous power induced by deficiency of vascular energy.

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## CASE IX.

*Cerebral Irritation during Dentition. Recovery.*

A little pallid boy, aged eight months, was brought to me at the Hospital May 21, 1850, having had during the previous three days several convulsive fits. I found the symptoms indicative of Cerebral Irritation: there was heat of head and distension of the veins of the scalp, rolling and tossing of the head, the hands being frequently raised to it; the cry was of that

melancholy character peculiar to the disease, resembling much that of the hare; there was the contracted brow, a dry skin, parched lips, gums distended and hot, and painful in the upper jaw, and a pulse contra-indicating, from its fluttering rapidity and yielding character, any depletory measures. Although I was aware that by lancing the gums I should give immediate relief to some of the symptoms, I considered on the other hand that, supposing the hæmorrhage to be great, as in some cases it is—especially when the child is in a weakened condition,—I should be running the risk of losing my patient by the increase of the Cerebral Irritation. I therefore resisted the importunities of the mother to lance the gums, and ordered her to get the child some Ice to be introduced by small pieces into the mouth; the head also to be kept constantly cold with Iced water, an aperient powder to evacuate the bowels, and the Chlorate of Potash Mixture every three hours.

The Ice proved to be as effectual in relieving the tension and heat of the gums as lancing would have been. The head symptoms subsided under the Chlorate of Potash and Ice in three days, and subsequent treatment with small doses

of the Sesquioxide of Iron, and a little addition to the maternal supply in the shape of tops and bottoms boiled in water, brought the little fellow into a better state of health than he had ever been before.

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## CASE X.

*Case of Cerebral Irritation from long-continued Suckling. Recovery.*

This child, one year and nine months' old, is one of the pale, flabby, wretched-looking victims to this most pernicious practice. With a large head, and a wasted body, and the countenance of an old person, the bones of the face even being prominent, this poor child has the usual symptoms which invariably present themselves when, from deficient nourishment, the vascular power does not keep pace with and control the nervous. Watchfulness, severe headache, contracted brow, eyes intolerant of light, a vacant, stupid aspect, listlessness, obstinately constipated bowels, deficient secretion from the kidneys; the head hot,

and the rest of the body cold; these are the principal symptoms which presented themselves. But it would be tedious to give the various fluctuations in this case in detail, although the instruction derivable from it was very great. There was considerable difficulty in finding a food that would remain upon the weakened stomach, and contribute sufficient nourishment. I fear there may have been some carelessness on the mother's part in this respect. Biscuit-powder, and tops and bottoms boiled in plain water, were at first the best received; and ultimately, by a gradual process of increasing the nutrient properties of the food administered, we arrived at animal broths and the Semola, under which, together with Cod-liver Oil and the Sesquioxide of Iron, one drachm of the former, and five grains of the latter three times a day, and assiduous sponging of the body and head with vinegar and water every night and morning, in two months my little patient was freed from all the symptoms of Cerebral Irritability. She now began to run alone, which before had never been thought of, and the fat beginning to cover all the bones, that old look which she had presented when first brought to me gave place to the cheerfulness proper to the child. When discharged

the head remained large, and it left upon my mind an impression that, in the event of the blood by any means becoming again anæmic, cerebral symptoms would certainly re-appear.

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## CASE XI.

*Cerebral Irritation as a sequela of Scarlatina. Recovery.*

Eliza B—, aged $2\frac{1}{2}$ years, had had Scarlatina two months before I was consulted. A certain amount of peevishness and restlessness had characterized the child subsequent to her recovery, and the skin had been dry and hard. The appetite after a time became very meagre; there was some sickness and headache, and an irregular state of bowels, which induced the parents to request my attendance, May 8, 1849. Having ascertained the history of the case, I proceeded to enquire as to the present symptoms and condition of my patient. She was thin and pale; there was a frown on the forehead, an anxious appearance of the face; the eyes were prominent and glassy,

and the pupils dilated; the head was hotter than natural, and carried droopingly. I understood the sleep to be much disturbed, and that the eyelids were but half closed. The skin remained dry and hot, the tongue red, mouth somewhat parched, and the bowels at this time relaxed from the action of medicine. Combined with these symptoms of Cerebral Irritation, there was one of no uncommon occurrence in cases arising after the eruptive fevers, and especially after scarlet fever, namely, violent pain in one ear, causing the poor child at times to scream with agony. The remedies prescribed were a warm bath for five minutes; a warm bran-poultice to the ear to be renewed every four hours; iced water to the head; and the Chlorate of Potash with Acid, every four hours. As much nourishment in the shape of mutton-broth, beef-tea, and bread and butter as would be taken, and perfect quietude in a darkened room. This plan was persisted in for three days with decided benefit. The pain in the ear was entirely removed by the poultices, without the aid of leeches; the eye became less glassy and prominent, the frown diminished, and the sleep was more sound. So great was the improvement that persistence in

the plan of treatment was somewhat relaxed, but, as it appeared, rather too soon. On the fourth day I found some of the head symptoms returning, so that three more days of the darkened room was decided upon, and a persistence in the iced water. The dose of the Chlorate was increased and given now every six hours. An aperient powder (Rhubarb and Magnesia) to be given early in the morning. The ear did not require any further treatment.

May 15. The three days having expired, my little patient was again released from the darkened chamber and the iced water. From this time no untoward symptom occurred; the skin had recovered its natural moisture; the frown disappeared by degrees; the eyes assumed their wonted aspect. Food being taken and retained, and well assimilated, the rounded form soon began to show itself, and in three weeks from the commencement of my attendance I was enabled to pronounce the little girl quite well.

This is not a case of great severity, but I have selected it as a type of a class of cases which very frequently present themselves amongst those of our patients who, from their means and their habits, are accustomed to seek advice early, espe-

cially when their children are attacked. Happily the treatment as in this case will be invariably successful if properly adapted to the amount of stamina in the constitution of the child. I have applied leeches for the affection of the ear, but not of late. I find the soothing influence of the poultice invariably sufficient in this early stage to stay further mischief; and in more advanced cases, suppuration will have taken place in the meatus, which will require the treatment I have advised in a paper published in *The Lancet* of July 13, 1850, treating especially upon Discharges from the Aural and other passages.

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## CASE XII.

*Cerebral Irritation in conjunction with Hooping-cough. Death.*

W. A—, aged 3 years, was brought to the Hospital in January, 1850, suffering most severely from a very aggravated attack of Hooping-cough. The face was blue and bloated with the obstruction to the venous circulation produced by the

intensity of the fits of coughing. It was indeed painful to witness the suffering of this poor child, and yet bad as it was, there was no reason to apprehend a fatal result unless the brain should become affected. Such unfortunately was the result of this long-continued venous obstruction. At the third visit I noticed the ever-alarming frown, and that drooping of the head and intolerance of light, which so mark Cerebral disturbance. In this case, from the great turgescence of the vessels of the scalp, I was induced to order the application of three leeches and a grain of Calomel every four hours in combination with the Iodide of Potassium. No benefit resulted from the abstraction of blood—the head was kept well wetted subsequently with spirit lotion and ice, and the Calomel and Iodine continued during the two next days with some benefit. On the fourth day from the decided indication of Cerebral disturbance, convulsions set in, and continued at frequent intervals until the sixth day, when the poor little sufferer expired. In a post mortem examination I found considerable effusion into the ventricles of the Brain, and much venous conjestion. There was no ramolissement of the central parts of the Brain, but on

the membranes and surface of the brain there were numerous patches of aggregated granular tubercle. Strangely enough the lungs appeared only slightly conjested, whilst the surface of the liver was much studded with the same granular tubercular matter found on the surface of the brain.

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## CASE XIII.

*Cerebral Irritation produced by profuse cultivation of the hair and the practice of wearing heavy hats. Recovery.*

James W—, aged 4 years, was brought to me suffering from severe headache and derangement of stomach. It had continued for several weeks, and did not give way to the usual purgative treatment. There was the constant frown, with sleeplessness, wasting of the limbs, loss of appetite, fretfulness, constant desire to be nursed and to hide his head in his mother's lap. The boy had evidently been a fine, hearty fellow, but unfortunately for him he had a fine head of thick curly

hair, of which his mother was absurdly proud. She had allowed it to grow so profusely that it hung in long ringlets, and consisted of between one and two pounds weight; added to this, the usual absurdly heavy, be-feathered hat contributed to keep the head at a temperature something above fever-heat, and hence arose very naturally those symptoms of Cerebral Irritation I was called upon to treat My first care of course was to get rid of the cause of the malady, but equally of course vanity was loth to give up its idol. I persisted, but it was only by repeated operations of the barber's shears that I was enabled to get rid of the necessary quantum of superfluous hair. Having obtained this, and a promise to put aside the monstrous grenadier's shacko previously worn, I set to work, by means of a cold Douche to the head night and morning, regular and gentle exercise, an occasional aperient, and the Chlorate of Potash, to get rid of the Cerebral symptoms, and to restore the lost tone to the muscular and nervous systems, which had been so reduced that it took some four weeks properly to re-establish my little patient. Excessive cultivation of the hair is a great source of debility and its attendant consequences. This is a fact

which requires to be generally known by mothers and nurses, for nothing tends to create general as well as Cerebral disturbance in the young so much as keeping the brain in a temperature greater than that of the rest of the body. The monstrous, ridiculous and absurd hats and bonnets poor suffering infancy is doomed to appear in produce an infinitude of mischief which is sometimes more than all our science can remedy. It has been a source of congratulation that our fashions have of late years been made subservient to health and comfort amongst adults, and I do hope that our little ones, who cannot reason for themselves, will soon have the like concession made to them.

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## CASE XIV.

*Cerebral Irritation following Scarlet Fever—Convulsions—Paralysis—Total loss of consciousness for a month—Failure of Mercurial treatment—Successful employment of the Iodide.*

J. C—, aged 7 years, had been a stout, hearty boy until three months since, when he was seized

with Scarlet Fever, from which his recovery was slow; he remained weak and languid, and there arose a purulent discharge from the ear. Six weeks after the commencement of the fever his intellect began to get dull, and convulsions were observed; the cerebral symptoms increased, and a month since—that is, two months from the original attack of Scarlatina—he had become quite unconscious: the legs and arms were paralysed; the eyes were fixed and vacant, the pupils being widely dilated; he never spoke or appeared to suffer pain when disturbed, but moaned continually, and had a rather severe cough, with considerable mucous rattle. When I was called upon to visit him I found him lying in this unconscious condition, and there were sores upon his hips from so constantly lying in one position. I found he had been leeched and blistered, and he was then taking powders containing Hydrargyrum cum Cretâ. Vinegar and water was applied to the head, but in a manner more likely to form a warm poultice than produce an evaporating effect, for thick clothes, several times doubled, were pressing upon the poor child's head. My first care was to remove these, substituting some

thin muslin steeped in iced water. Unpromising as the case appeared,—it having been abandoned as hopeless by the gentleman who had been in attendance,—I yet felt that, although I had never seen so bad a case recover, still the extraordinary influence which Iodine exerts gave a ray of hope, and I consequently ordered one grain in water and Syrup of Orange Peel four times a day, and the blister to the nape of the neck to be repeated, the head being constantly bathed in iced water. Strong beef-tea to be given every hour. Two days of this treatment relaxed slightly the rigidity of the arms and legs, and the dilated pupil became natural in size, but was still inactive, and the moaning ceased. On the third day the pupil answered to the stimulus of light; the cough and mucous rattle had nearly subsided; one leg began to exhibit signs of motive power; consciousness of surrounding objects was apparent from the eye following the movements of the attendants; the lips and tongue began to be used for the purpose of sucking in the nourishment which was administered in a fluid form; and the skin had, for the first time, been bedewed with perspiration. This latter symptom, together with

an injected condition of the vessels of the conjunctiva, and an increased secretion of tears from the lacrymal gland, exhibited the specific effect of the Iodine upon the system. From this time the little fellow has very gradually acquired the use of his intellect and bodily powers, and will, after he has been built up with Iron or Cod-liver Oil, or both, and good nourishment, become as hearty and well as ever he was, and certainly a highly creditable specimen of the great advantage of Iodine in the last or hydrocephalic, as well as in the second stage of this malady.

I have ventured to record this case, although I have already given one arising from the same cause, but the very extraordinary circumstances detailed in the report warrant me in the publication of so remarkable an instance of the power of Iodine in curing this disease in its most aggravated form. It is highly instructive also, in shewing how inoperative for good, if not really injurious, is the treatment by leeches and mercury. Indeed, after witnessing such a case as this, instead of despairing of ever curing the severe Cerebral Diseases to which children are obnoxious, as we have been hitherto taught and

accustomed to do, I really think we ought always to expect a favorable issue if the treatment be judiciously applied.

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